

NOTICE

This device complies with part 15 of the FCC Rules. Operation is subject to the following two condition: (1) This device may not cause harmful interface, and (2) This device must accept any interface received, including Interface that may cause undesired operation.

This equipment has been tested and found comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interface when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interface to radio communications. Operation of this equipment in a residential area is likely to cause harmful interface in which case the user will be required to correct the interface at his own expense.

- All brand and trademark are belonged to their respective owner.
- Specifications are subject change without notice.

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Installation

- 1) First of all, you must make sure that the power is disconnected from your equipment before connecting the scanner. Besides, you also have to check the cable connector of the scanner matches your equipment interface correctly.
- 2) Boot up your computer after connecting the scanner with your equipment, the scanner will make a long music and light the LED, above scanner to indicate a successful power on. Trigger the button, the scan line in front of scanner will activate. Now you can start to set programming optimal usage.

☛ If any of the above operation is not right, turn off the power immediately and check any improper connections. Go through all above steps again.

Recommended Steps

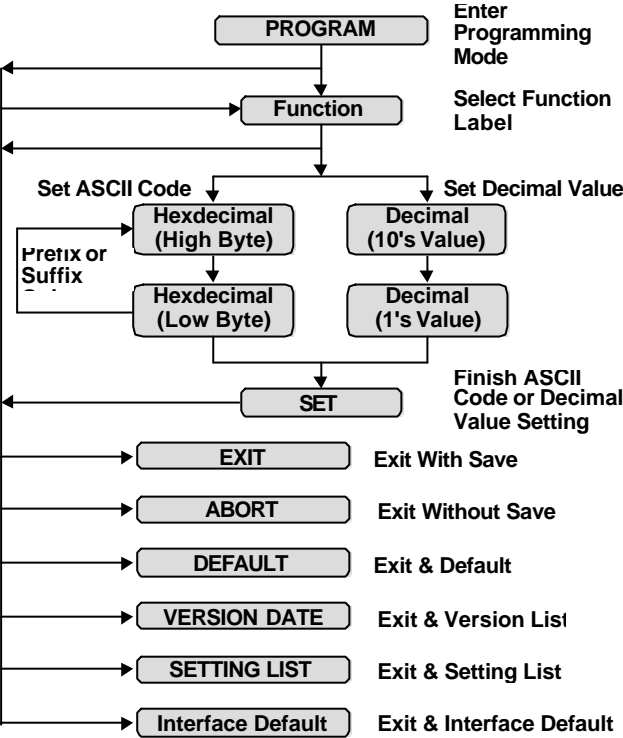
When the required settings have been configured, all settings are stored in non-volatile memory of scanner after reading **EXIT** label. There are recommended steps as follows.

- 1) Set right host interface for your scanner at  10.
(The scanner is in factory default as bold label)
- 2) Set interface to optimize protocol of scanner with your host in Chapter 2.
- 3) Set system control of scanner, such as specific adjustments double confirm, power saving, indicator and scanning mode which you prefer usage in Chapter 3.
- 4) Set code option of scanner for your usage in Chapter 4. You must make sure to enable the symbology first, then Min./Max. code length, code ID checksum and truncate digits are also converted.
- 5) Set string format of the scanner, such as preamble, postamble, prefix, suffix, code ID and code name transmission for your application in Chapter 5.

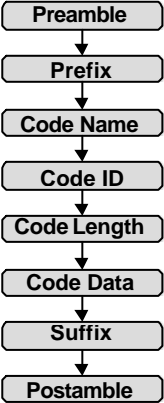
☛ If any of the error step is processing, scanner will generate a 5 warning beeps to indicate an invalid setting. You have to take care of this matter and set correctly again.

☛ If still not work properly. Please contact with dealer.

Configuration Flowchart



String Output Flowchart



Default Setting

Code Type	Read Enable	Length		Truncate		Code ID
		Min.	Max.	Leading	Ending	
UPC-A	✓	-	-	0	0	A
UPC-E	✓	-	-	0	0	E
EAN-13	✓	-	-	0	0	F
EAN-8	✓	-	-	0	0	FF
Code-39	✓	0	0	0	0	M
Interleaved 2 of 5		6	0	0	0	I
Industrial 2 of 5		4	0	0	0	H
Matrix 2 of 5		4	0	0	0	G
China Post 2 of 5		11	11	0	0	J
Codabar/NW7	✓	4	0	0	0	N
Code-128	✓	0	0	0	0	K
Code-93		4	0	0	0	L
Code-11		4	0	0	0	O
MSI/Plessey		4	0	0	0	P
UK/Plessey		4	0	0	0	R
Telepen		4	0	0	0	S
IATA		4	0	0	0	Q

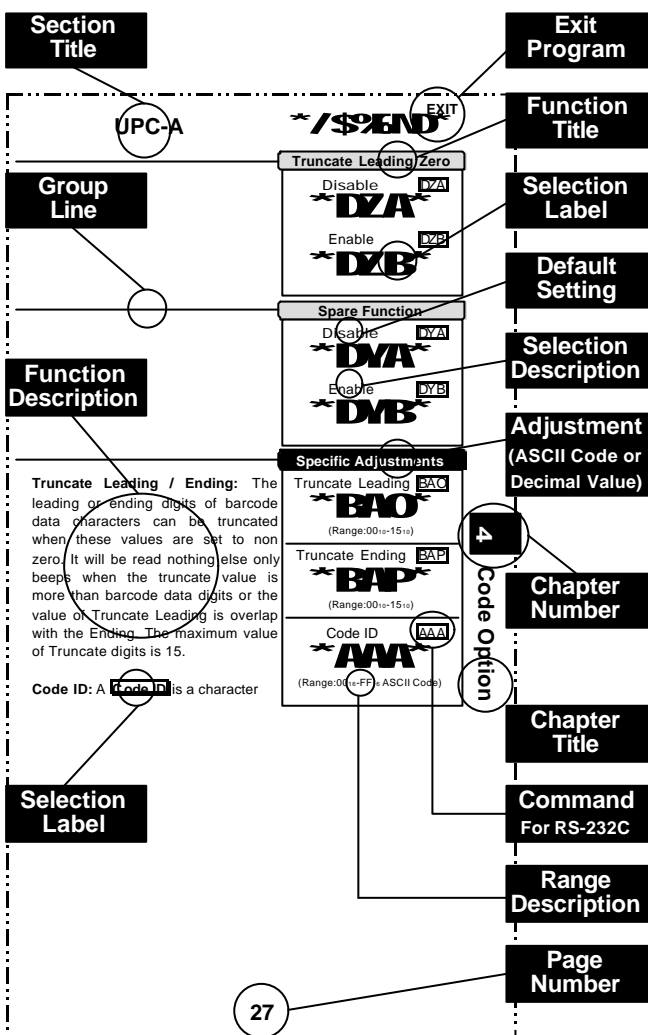
Adjustment	Value	Result
Beep Loudness	05	Level 5
Beep Tone	24	2.4 KHz
Beep Duration	06	60 mSec
Beep Tone1	12	1.2 KHz
Beep Duration1	06	60 mSec
Stand-by Time	15	15 Sec
Active Time	20	200 mSec
Sleep Time	20	200 mSec
Good-read Delay	50	500 mSec
Double Confirm Times	01	Once
Inter-char. Delay	01	1 mSec
Transmit Delay	00	0 mSec
Response Delay	30	3 Sec
Add-on Wait Time	50	500 mSec
Margin Delay	10	100 mSec
Preamble Data1	00 ₁₆	<NULL>
Preamble Data2	00 ₁₆	<NULL>
Postamble Data1	0D ₁₆	<CR>
Postamble Data2	0A ₁₆	<LF>
Prefix Data (All Datas)	00 ₁₆	<NULL>
Suffix Data (All Datas)	00 ₁₆	<NULL>
Add-on Insertion (All Datas)	00 ₁₆	<NULL>
Insertion1-4 (Position & All Datas)	00 ₁₆	<NULL>
Concatenation Data	29 ₁₆	<GS>

Manual Label Layout

The scanner must be set by reading the barcode labels in manual. The discription of label is as follows.

1

Introduction



The factory default settings are indicated by bold symbols.

Frequent Question

Q: Why scanner block the keyboard operation?

A: Check the cable connection with your equipment, then turn power on again.

Q: If scanner has a good read beep but nothing transferring after read a label.

A: Using the **SETTING LIST** at **□10** to show what current setting of scanner is, or reset to Default, (or select right Interface default if scanner to be change another interface used), then re-program scanner again.

Q: If scanner dosen't need an Enter character addition after each barcode label transmission.

A: Refer to postamble transmission at **□60**, then set **Disable**.

Q: If scanner needs to read single digit code.

A: Refer to Min. code length of code option use "01" in Chapter 4 for single code readable.

Q: If scanner isn't able to discriminate an unknown label, but read manual very well.

A: Refer to code name at **□64** to set **Enable**, read a barcode label, then you will know what symbology is read. Beside, it maybe need to verify checksum. Refer to verify checksum of code option in Chapter 4, and set **Enable**.

Q: If scanner transfers character very slow or loses some characters on screen in keyboard interface after reading a label.

A: You may set caps lock to be **Alt+Keypad** at **□11**. Otherwise, it maybe mis-match of transmission rate, therefore, you can adjust an appropriate **Inter-char. Delay** to match your equipment. See **□11**.

Q: If scanner want to read a label as function key for your apprication.

A: Refer to function key simulation at **□11** and set **Enable**, then scanner can transmit a code as function key. It is used for keyboard interface only. Beside, you must make sure that a label is encoded as function key, and its ASCII code is from 00₁₆ to 1F₁₆. You can refer to ASCII code table at **□71**.

Q: Could I change scanner into different type interface directly?

A: You can change factory interface default for other type interface.

By plug different cable, program scanner and set right interface to exit, then the scanner will be change to another interface. However, you must make sure what cable you need. Refer Cable Type to 66, 67.

Q: How to configure scanner via RS-232C?

A: Next to the selection description, you will find a frame command, such as **AAB**. These commands can be sent to scanner with RS-232C interface. You must make sure that scanner is the same protocol as your equipment of RS-232C, and light source of scanner has been activated by pressing button.

Example Beep Loudness Level "10", Good-read Beep "Enable"

To configure the required commands proceed as follows:

Send as: $\langle \text{ESC} \rangle (1B_{16}) \Rightarrow \text{Command(s)} \Rightarrow \langle \text{CR} \rangle (0D_{16})$

Send $\langle \text{ESC} \rangle \Rightarrow \boxed{\text{BAC}} \Rightarrow \boxed{\%01} \Rightarrow \boxed{\%00} \Rightarrow \boxed{\%OK} \Rightarrow \boxed{\text{CEB}} \Rightarrow \langle \text{CR} \rangle$

Beep 1 0 SET Good-read
Loudness Level Beep Enable

➡ Call to the dealer if scanner dose not work properly.

PROGRAM

*** / \$ % \$ I R ***

Host Interface

Interface Default

Keyboard Wedge

*** / \$ % 6 0 0 ***

RS-232C

*** / \$ % 6 0 1 ***

WAND EMULATION

*** / \$ % 6 0 2 ***

OCIA

*** / \$ % 6 0 3 ***

Spare Interface

*** / \$ % 6 0 4 ***

You can change factory interface default for other type interface. By plug different cable, program scanner and set right interface to exit, then the scanner will be change to another interface. However, you must make sure what cable you need. Refer Cable Type to □66, 67.

Miscellany

DEFAULT (without Interface)

*** / \$ % B E F ***

VERSION DATE

*** / \$ % V E R ***

SETTING LIST

*** / \$ % S T ***

ABORT

*** / \$ % A B C ***

DEFAULT: All settings are reset as bold label, but exclude interface setting.

VERSION DATE: You can get the software date of decoder on screen. It is important for maintainance.

SETTING LIST: First it is recommended that you need to excute a text editor program (such as PE2 and Word) for keyboard interface, or excute a terminal program

(such as Hyper Terminal) for RS-232. Then scanner will transmit current settings on screen.

ABORT: If you have a mis-setting or want to skip this current configuration during you are programming, using this function, all front settings are aborted before you set **EXIT** to finish programming.

➡ Programming will be finished while each label of miscellany is read.

Keyboard Wedge

EXIT
/\$%END

By selecting, you can change output speed of scanner to advance or match with host computer. Generally, set **High** or **Turbo** in working high performance. If some output characters of barcode have been lost or shown on screen slowly, you may need to set **Medium** or **Low** to match your host keyboard speed.

Keyboard Speed

Low **CZA**
Medium **CZB**
High **CZC**
Turbo **CZD**

2
Interface

Set **Enable** scanner can output code as pressing function-key in your application program while the barcode datas contain ASCII value between 01₁₆ to 1F₁₆. See 60 and Refer to ASCII table 71 at grey area. You'll find function-keys with ASCII codes.

Function Key Simulation

Disable **DBA**
Enable **DBB**

The **Keypad** have to select if your application program is only keypad numeric code acceptable. So, scanner will output code as press numeric keypad when it read numeric digit. (The keypad is in the right side of keyboard, and Num Lock control key is also on.)

Numeric Key Position

Alphabetic-key **DAA**
Keypad **DAB**

By selecting **Uppercase** or **Lowercase** scanner can get Caps Lock status. If **Alt+Keypad** is selected, Caps Lock and output will be independent.

Caps Lock

Uppercase **DDA**
Lowercase **ddb**
Alt+Keypad **DDD**

Example Barcode "ABCdef"

Status Selection	Caps Lock On	Caps Lock Off
Uppercase	ABCdef	abcDEF
Lowercase	abcDEF	ABCdef
Alt+Keypad	ABCdef	ABCdef

PROGRAM

/\$%\$IR

Keyboard Wedge

Keyboard Simulation

☐ DCA Disable

DCA

☐ DCB Enable

DCB

All of the PCs check the keyboard status during power-on selftest. It is recommended to **Enable** the function if you are working without keyboard installation. It simulates keyboard timing and pass keyboard present status to the PC during power-on.

Spare Function

☐ DEA Disable

DEA

☐ DEB Enable

DEB

Specific Adjustments

☐ BAL Inter-char. Delay

BAL

(Range:00₁₀-99₁₀ Unit:1ms)

☐ BAM Transmit Delay

BAM

(Range:00₁₀-99₁₀ Unit:10ms)

Inter-char. Delay: This delay is inserted after each data characters transmitted.If the transission speed is too high, the system may not be able to receive all characters. Adjust it and try out suited delay to makes system work properly.

Transmit Delay: It is a delay timer between barcode data output. The feature is used to transfer continually with shorter barcode data or multi-field scanning.

Example Barcode Data: "ABCD"

Inter-char. Delay: **2ms**

Transmit Delay: **10ms**

1) **PROGRAM** →

Entry Programming

2) **Inter-char. Delay** → **0** → **2** → **SET** →

2ms Inter-char. Delay

02*1ms(Unit)=2ms

3) **Transmit Delay** → **0** → **1** → **SET** →

10ms Transmit Delay

01*10ms(Unit)=10ms

4) **EXIT**

Exit Programming

Output

A	2ms	B	2ms	C	2ms	D	2ms	10ms
---	-----	---	-----	---	-----	---	-----	------

Keyboard Wedge

Select keyboard type connector of your host computer. Scanner must be selected to the appropriate host interface cable converter. Refer to Cable Type at 66.

EXIT
/\$%END

Keyboard Type	
IBM AT,PS/2	DF A
DFA	
IBM XT	DF B
DFB	
Macintosh ADB.	DF C
DFC	
IBM PS/2 25,30	DF D
DFD	
NEC 9801	DF E
DFE	
IBM PS/2 55	DF F
DF F	
IBM 5550	DF G
DFG	
KT 106	DF H
DFH	
IBM 5576	DF I
DFI	
Spare1	DF J
DFJ	
Spare2	DF K
DFK	
Spare3	DF L
DFL	
Spare4	DF M
DFM	

2

Interface

PROGRAM

/\$%\$IR

Keyboard Wedge

Keyboard Layout

DGA	USA (US)	DGA
DGB	Belgium (BE)	DGB
DGC	Danish (DK)	DGC
DGD	France (FR)	DGD
DGE	Germany (GR)	DGE
DGF	Italian (IT)	DGF
DGG	Portuguese (PO)	DGG
DGH	Spanish (SP)	DGH
DGI	Swedish (SV)	DGI
DGJ	Switzerland (SF)	DGJ
DGK	UK (UK)	DGK
DGL	Latin American (LA)	DGL
DGM	Japan	DGM
DGN	Spare2	DGN

The selecting of keyboard layout supports many country languages other than USA keyboard layout. First you need to confirm country language that you desire. In DOS, using command "Keyb" to selecte the desirable keyboard layout or in WINDOWS entry "Control" then pop "Keyboard" to selecte country at "language" item. For details, please refer to your DOS or WINDOWS user's manual.

RS-232C

EXIT
* / \$ % & ^ * *

CTS: Clear To Send (Hardware Signal)
RTS: Request To Send (Hardware Signal)
STX: Start Of Text (ASCII Code 02₁₆)
ETX: End Of Text (ASCII Code 03₁₆)
Xon: Transmit On (ASCII Code 13₁₆)
Xoff: Transmit Off (ASCII Code 11₁₆)

Disable: The communication only uses TxD and RxD signals without regard for any hardware or software handshaking protocol.

RTS/CTS (CTS/RTS): If the scanner wants to send the barcode data to host computer, it will issue the RTS (CTS) signal first, wait for the CTS (RTS) signal from the host computer, and then perform the normal data communication. If there is no replied CTS (RTS) signal from the host computer after the timeout (Response Delay) duration, the scanner will issue a 5 warning beeps.

Scanner Ready: The scanner will active the RTS signal after power-on, and will transmit data upon receiving active CTS signals.

Data Ready: The scanner will active the RTS signal to indicate a successful decoding and will transmit data upon receiving CTS signals.

STX/ETX: The STX and ETX are used to pack barcode together in the normal data transmission.

Xon/Xoff: When the host computer is unable to accept data, it sends an Xoff code to inform the scanner to suspend data transmission, and Xon to continue.

CTS Trigger: This operation enabled an external device to control scanning. The CTS trigger is controlled by applying an external trigger signal to the CTS input. When active, this signal causes scanning to begin as if the scanner's trigger was depressed. In the event of decoding, the trigger signal must be deactivated for a minimum of 50ms before another scan can be attempted.

Handshaking Protocol

Disable DLA

DLA

RTS/CTS DLB

DLB

CTS/RTS DLC

DLC

Scanner Ready DLD

DLD

Data Ready DLE

DLE

Xon/Xoff DLF

DLF

STX/ETX DLG

DLG

CTS Trigger DLH

DLH

Spare DLI

DLI

2

Interface

Baud Rate

<input type="checkbox"/> DHA	38400 Bps	*DHA*
<input type="checkbox"/> DHB	19200 Bps	*DHB*
<input type="checkbox"/> DHC	9600 Bps	*DHC*
<input type="checkbox"/> DHD	4800 Bps	*DHD*
<input type="checkbox"/> DHE	2400 Bps	*DHE*
<input type="checkbox"/> DHF	1200 Bps	*DHF*
<input type="checkbox"/> DHG	600 Bps	*DHG*
<input type="checkbox"/> DHH	300 Bps	*DHH*

Data Parity

<input type="checkbox"/> DKA	None	*DKA*
<input type="checkbox"/> DKC	Even	*DKC*
<input type="checkbox"/> DKD	Odd	*DKD*
<input type="checkbox"/> DKE	Space	*DKE*
<input type="checkbox"/> DKF	Mark	*DKF*

RS-232C

EXIT
/\$%END

Data Bits	
7 Bits	DJA
8 Bits	DJB

Stop Bits	
One Bit	DIA
Two Bits	DIB

2
Interface

Inter-char. Delay: It is delay time between data character's output. It is same as Inter-char. Delay of keyboard wedge, see □ 12.

Transmit Delay: It is a delay time between barcode data output. It is also same as Transmit Delay of Keyboard wedge, see □ 12.

Response Delay: This delay is used for serial communication of the scanner to waiting for handshaking acknowledgment from the host computer. If scanner doesn't get any acknowledgments from host after the timeout occurs, it will issue 5 warning beeps. You may check handshaking mode or adjust a longer delay timer. The feature is particularly useful for some applications that the host computer takes a longer time to respond.

Specific Adjustments	
Inter-char. Delay	BAL
BAL	
(Range:00 ₁₀ -99 ₁₀ Unit:1ms)	
Transmit Delay	BAM
BAM	
(Range:00 ₁₀ -99 ₁₀ Unit:10ms)	
Response Delay	BAN
BAN	
(Range:01 ₁₀ -99 ₁₀ Unit:100ms)	

PROGRAM

/\$%\$IR

Wand Emulation

Active Level

DMA Bar Hi/Space Lo

DMA

DMB Bar Lo/Space Hi

DMB

Bar Hi/Space Lo: Black will be transmitted as a high voltage level (+5V) and space as low level (0V).

Bar Lo/Space Hi: Black will be transmitted as a low voltage level (0V) and space as high level (+5V).

Normal Level

DNA

Low

DNA

DNB

High

DNB

You must make sure what is Normal Level of your wand decoder device in stand-by (idle). So, initial signal state as a **High** voltage level (+5V) or **Low** voltage level (0V).

Output Speed

DOA

Low

DOA

DOB

Medium

DOB

DOC

High

DOC

DOD

Turbo

DOD

This setting is same as serial transmission baud rate, and it must be approbated your wand decoder resolution. The unit of speed is a width of minimum narrow bar.

Output Speed	Bps (bits per second)
Low	1200
Medium	2400
High	4800
Turbo	9600

Narrow/Wide Ratio

DOA

1:2

DOA

DOB

1:2.5

DOB

DOC

1:3

DOC

DOD

1:3.5

DOD

The setting is applied two kinds of ratio barcode symbologies with narrow and wide only, such as Code-39, Interleaved 2 of 5, Codabar, Plessey and IATA...etc. So, it will be ignored if some kinds of barcode symbologies, such as EAN, UPC, and Code-128, are read. This setting is able to adjust appropriate signal width during transmitting the bar image. The ratio allows to adjust from **1:2** to **1:3.5** but upon your wand decoder device.

Wand Emulation

Discrete codes such as Code-39 and Codabar are featured an Inter-Char. Gap between two characters of barcode. It makes them suitable for printing in the Narrow or Wide gap by mechanical numbering system. You can choose one suit your decoder.

Generally, wand emulation Output signals same as symbology when it read a barcode. By setting, the scanner can read many kinds of barcode symbologies, but transmitted as code-39 full ASCII format, even your decoder device no support them.

Margin Delay: It is a timer of zone like space zone of barcode label margin. The width of margin time will be added before and after in each barcode data automatically when it is transmitted.

Transmit Delay: It is a delay time between barcode data output. It is the same as Transmit Delay of keyboard wedge, see □ 12.

Example Normal Level: Low, Bar Lo/Space Hi

Barcode Pattern 



EXIT
/\$%END

Inter-char. Gap	
Narrow	DPA
DPA	
Wide	DPB
DPB	
Code-39 Simulation	
Disable	DRA
DRA	
Enable	DRB
DRB	
Specific Adjustments	
Margin Delay	BAL
BAL	
(Range:00 ₁₀ -99 ₁₀ Unit:10ms)	
Transmit Delay	BAM
BAM	
(Range:00 ₁₀ -99 ₁₀ Unit:10ms)	

2
Interface

Protocol Type

DSA

NCR

DSA

DSB

DTS

DSB

DSC

NCR+ASCII

DSC

DSD

DTS+ASCII

DSD

DSE

ASCII

DSE

Data Parity

DTA

Even

DTA

DTB

Odd

DTB

DTC

Space

DTC

DTD

Mark

DTD

Spare Function

DUA

Disable

DUA

DUB

Enable

DUB

Specific Adjustments

BAM

Transmit Delay

BAM(Range:00₁₀-99₁₀ Unit:10ms)

Transmit Delay: It is a delay time between barcode data output. It is also the same as Transmit Delay of keyboard wedge, see 12.

System Control

EXIT
/\$%END

After power-on the scanner will generate music to indicate the successful selftest. You can inhibit the music by setting **Disable**.

Power-on Music

Disable **CBA**
Enable **CBB**

By setting **Enable** the scanner will activate the light source after the power-on without trigger button.

Power-on Auto Trigger

Disable **CCA**
Enable **CCB**

After each successful reading, the scanner will light Good-read LED above scanner to indicate a good barcode reading.

Good-read LED

Disable **CDA**
Enable **CDB**

After each successful reading, the scanner will beep buzzer to indicate a good barcode reading, and its **Loudness**, **Tone** and **Duration** are adjustable by setting of Specific Adjustment at 24.

Good-read Beep

Disable **CEA**
Enable **CEB**

The scanner will operate in Power Saving mode as this function is **Enabled**. Current will be reduced to less than 20 mA, but sensibility is also become slowly. You will find the light source of CCD scanner to be flashed and motor of laser scanner to be stopped as it read a code or timeout.

Power Saving

Disable **CJA**
Enable **CJB**

3

System Control

PROGRAM

/\$%\$IR

System Control

Double Confirm

CSA

Disable

CSA

CSB

Enable

CSB

The scanner will require many times of successful decoding to confirm the barcode data, and the more confirm times the more inhibitive mis-reading code. (Refer to setting of Double Confirm Times at □25)

Case Conversion

CTA

Disable

CTA

CTC

Uppercase

CTC

CTD

Lowercase

CTD

It converses all output characters to be same printing-case, even they have two kinds of case within a barcode data.

Example Barcode "BarCode",

Uppercase	BARCODE
Lowercase	barcode

Field Control

CRA

One Field

CRA

CRB

Multi Field

CRB

The scanner can read many sets of barcode data on the same scanning line at the same time, even they are different kinds of barcode symbology. The direction of read-out is form left to right. Refer to Codabar/NW7 of Test Chart at □69.

Inter-char. Gap

CGA

Narrow

CGA

CGB

Wide

CGB

Discrete codes such as Code-39 and Codabar are featured with an Inter-char. Gap between two characters of barcode. You may set Wide as the Inter-char. Gap of barcode lable is wider.

Spare Function

CPA

Disable

CPA

CPB

Enable

CPB

System Control

EXIT
/\$%END

Good-read Off: The trigger button must be pressed to active scanning. The light source of scanner stops scanning when there is a successful reading or no code is decoded after the **Stand-by Timer** □24 duration elapsed. (Laser Model Default)

Momentary: The trigger button acts as a switch. Press button to active scanning and release button stop scanning.

Alternate: The trigger button acts as a toggle switch. Press button to active or stop scanning.

Timeout Off: The trigger button must be pressed to active scanning, and scanner stops scanning when no code is decoded after the **Stand-by Timer** □24 duration elapsed. (CCD Model Default)

Timeout Flash: The trigger button must be pressed to keep scanning. The scanner flashes the light source when no code is decoded after the

Stand-by Timer □24 duration elapsed. This mode can save the power resource and extend the operation life of the light source. The scanner can be waked up when there is a successful reading or trigger button to be pressed.

Continue: The scanner always keeps reading, and no matter when trigger button is pressed or duration is elapsed.

Test Only: The scanner always keeps reading continuously and same label reading is allowed without double confirm. The feature can test the performance of scanner for reading speed and sensitive. (Diagnostic mode)

Object Detect: Wake up automatically without trigger switch, if an object in the front of scanner is detected. (Some Laser Model Only)

➤ For saving power and longer life of laser component, all scanning mode, the laser beam and motor will stop when no code is decoded.

Scanning Mode

Good-read Off **CAB**

CAB

Momentary **CAC**

CAC

Alternate **CAD**

CAD

Timeout Off **CAE**

CAE

Timeout Flash **CAF**

CAF

Continue **CAG**

CAG

Test Only **CAA**

CAA

Object Detect **CAI**

CAI

Spare **CAJ**

CAJ

3 System Control

Specific Adjustments

BAC Beep Loudness

BAC

(Range:01₁₀-10₁₀ Unit:Level)

BAD Beep Tone

BAD

(Range:05₁₀-50₁₀ Unit:100Hz)

BAE Beep Duration

BAE

(Range:01₁₀-99₁₀ Unit:10ms)

BDA Beep Tone1

BDA

(Range:05₁₀-50₁₀ Unit:100Hz)

BDB Beep Duration1

BDB

(Range:00₁₀-99₁₀ Unit:10ms)

BAF Stand-by Time

BAF

(Range:01₁₀-99₁₀ Unit:1s)

BAG Active Time

BAG

(Range:10₁₀-99₁₀ Unit:10ms)

BAH Sleep Time

BAH

(Range:10₁₀-99₁₀ Unit:10ms)

BAI Good-read Delay

BAI

(Range:10₁₀-99₁₀ Unit:10ms)

Beep Adjustments: You can adjust Beep Loudness, Beep Tone and Beep Duration of good reading upon your favorite usage.

Stand-by Time: A timeout duration of 1 to 99 seconds can be adjusted. The Stand-by Time that is valid scanning duration. It is only effective when the scanning mode of CCD is operated in Good-read Off, Timeout Off or Timeout Flash mode. Beside, if laser scanner no code to read during Stand-by Time, the laser beam and motor will be shutdown to saving life time of laser diode.

Active/Sleep Time: There are two durations that are used when the scanner operated in Timeout Flash scanning mode. The scanner entries flash operation when no code is read until Stand-by Time timeout. The Action Time is lighting duration and the Sleep Time is blanking duration while light source flashing. The barcode can also be read during flashing of light source and then waked up the scanner automatically.

Good-read Delay: This feature is a limit duration during the same barcode data to be read continuously, except operated in Good-read Off and Test mode. The timer will be reset when

different barcode data reading.

System Control

EXIT
/\$END

Specific Adjustments

Add-on Waiting Time: This setting is only used for reading WPC symbologies with Add-on, such as EAN and UPC. The WPC must be decoded first, then Add-on. But Add-on may not decode very well during it read. Therefore, scanner offer a waiting time for reading Add-on confirmation and transmits WPC with Add-on at the same time.

Addon-Waiting Time BAK

BAK
(Range:01₁₀-99₁₀ Unit:10ms)

Double Confirm Times BAJ

BAJ
(Range:01₁₀-99₁₀)

Public Min. Length BAA

BAA
(Range:01₁₀-56₁₀)

Public Max. Length BAB

BAB
(Range:04₁₀-56₁₀)

Double Confirm Times: If it is enabled, the scanner will require many times successful decoding to confirm the barcode data. More confirm times more inhibitive miss-reading code.

This feature should be depended on the symbology and quality of barcodes reading. Selecting a higher value will reduce read-out speed.

Public Min. / Max. Length: Public Minimum and Maximum length can be set to qualify data entry. They are effect all symbologies if their Min./Max. Code Length is zero. The length is defined to the actual barcode data length sent. Label with length exceeds these limits will be rejected. Make sure that the Minimum length setting is no greater than the Maximum length setting, or all the labels of the symbology will not be read. In particular, you can set the same value for both Minimum and Maximum reading length to force the fixed length barcode decoded. The values of setting are no effect in some fixed length symbologies (i.e. UPC and EAN call WPC).

3

System Control

PROGRAM

/\$%\$TR

UPC-A

Read

DVA

Disable

DMA

DVB

Enable

DMB

Format

Leading	Data Digits	Check
Zero	(11 Digits)	Digit

Add-on

DWA

Disable

DMA

DWB

Add-on 2 Only

DMB

DWC

Add-on 5 Only

DMC

DWD

Add-on 2 or 5

DMB

The Add-on barcode is the supplemental 2 or 5 characters for WPC code.

Format

Leading	Data Digits	Check	Add-on
Zero	(11 Digits)	Digit	2 or 5

Waiting Add-on

DXA

Disable

DMA

DXB

Enable

DMB

It is recommended to set **Enable** if the WPC with Add-on code must be read together. You have to enable it first and refer to **Add-on Waiting Time** at 24 for good reading of Add-on.

Check Digit Transmission

EAA

Disable

EAA

EAB

Enable

EAB

By setting **Enable** checks digit will be transmitted.

UPC-A

EXIT
/\$END

The leading "0" digits of barcode data characters can be truncated when the function is enabled.

Example Barcode "00054321"

Output "54321"

Truncate Leading Zero

Disable ☐ DZA

DZA

Enable ☐ DZB

DZB

Spare Function

Disable ☐ DYA

DYA

Enable ☐ DYB

DYB

Specific Adjustments

Truncate Leading ☐ BAO

BAO

(Range:00₁₀-15₁₀)

Truncate Ending ☐ BAP

BAP

(Range:00₁₀-15₁₀)

Code ID ☐ AAA

AAA

(Range:00₁₆-FF₁₆ ASCII Code)

Insertion Group ☐ BDC

BDC

(Range:00₁₀-99₁₀)

Truncate Leading / Ending: The leading or ending digits of barcode data characters can be truncated when these values are set to non zero. It will be read nothing else only beeps when the truncate value is more than barcode data digits or the value of Truncate Leading is overlap with the Ending. The maximum value of Truncate digits is 15.

Code ID: A ☐ Code ID is a character which used to represent the symbology upon succeeding reading. A ☐ Code ID is prefixed to the data begin or tail transmitted if the feature is selected.

There are some symbologies (i.e. UPC-E and EAN-8) include 2 Code IDs. If your application want to transmit Code ID, you must set Code ID Transmission to ☐ Enable first. Refer to Code ID Transmission at ☐ 64.

Insertion Group: The scanner offer one or two insertion groups for own symbology. By setting one or two digits to indicate which insertion group you want to insert. You may refer to Character Insertion at ☐ 63.

4

Code Option

PROGRAM

/\$%\$IR

UPC-E

Read	Format								
<div><div>ECA</div><div>Disable</div><div>*ECA*</div></div> <div><div>ECB</div><div>Enable</div><div>*ECB*</div></div>	<table><tr><td>Leading</td><td>Data Digits</td><td>Check</td></tr><tr><td>Zero</td><td>(6 Digits)</td><td>Digit</td></tr></table>	Leading	Data Digits	Check	Zero	(6 Digits)	Digit		
Leading	Data Digits	Check							
Zero	(6 Digits)	Digit							
Add-on	Format								
<div><div>EDA</div><div>Disable</div><div>*EDA*</div></div> <div><div>EDB</div><div>Add-on 2 Only</div><div>*EDB*</div></div> <div><div>EDC</div><div>Add-on 5 Only</div><div>*EDC*</div></div> <div><div>EDD</div><div>Add-on 2 or 5</div><div>*EDD*</div></div>	<table><tr><td>Leading</td><td>Data Digits</td><td>Check</td><td>Add-on</td></tr><tr><td>Zero</td><td>(6 Digits)</td><td>Digit</td><td>2 or 5</td></tr></table>	Leading	Data Digits	Check	Add-on	Zero	(6 Digits)	Digit	2 or 5
Leading	Data Digits	Check	Add-on						
Zero	(6 Digits)	Digit	2 or 5						
Waiting Add-on	Refer to 26.								
<div><div>EEA</div><div>Disable</div><div>*EEA*</div></div> <div><div>EEB</div><div>Enable</div><div>*EEB*</div></div>									
Expansion	The expansion function is used only for UPC-E and EAN-8 code reading. It extends to 13-digits with "0" digits when the feature is enabled.								
<div><div>EFA</div><div>Disable</div><div>*EFA*</div></div> <div><div>EFB</div><div>Enable</div><div>*EFB*</div></div>									

Example Barcode "01236547"**Output** "0012360000057"

UPC-E

EXIT
/\$%END

Refer to 26.

Check Digit Transmission

Disable EA
EIA
Enable EB
EIB

Refer to 27.

Truncate Leading Zero

Disable EHA
EHA
Enable EHB
EHB

Spare Function

Disable EGA
EGA
Enable EGB
EGB

Refer to 27.

Specific Adjustments

Truncate Leading BAQ
BAQ
(Range:00₁₀-15₁₀)

Truncate Ending BAR
BAR
(Range:00₁₀-15₁₀)

Code ID1 AAB
AAB
(Range:00₁₆-FF₁₆ ASCII Code)

Code ID2 AAC
AAC
(Range:00₁₆-FF₁₆ ASCII Code)

Insertion Group BDD
BDD
(Range:00₁₀-99₁₀)

4

Code Option

PROGRAM */\$%\$IR*

EAN-13

Read	
EKA	Disable
EKB	Enable

Format

Data Digits (12 Digits)	Check Digit
----------------------------	----------------

Add-on	
ELA	Disable
ELB	Add-on 2 Only
ELC	Add-on 5 Only
ELD	Add-on 2 or 5

Format

Data Digits (12 Digits)	Check Digit	Add-on 2 or 5
----------------------------	----------------	------------------

Waiting Add-on	
EMA	Disable
EMB	Enable

Refer to 26.

ISBN/ISSN Conversion	
ENA	Disable
ENB	Enable

The ISBN (International Standard Book Number) and ISSN (International Standard Serial Number) are two kinds of barcode for book and magazine. The ISBN is 10 digits with leading "978" and the ISSN is 8 digits with leading "977" of the "EAN-13"

symbology.

Example Barcode "987957222720"

Output "957222724"

Example Barcode "9771019248004"

Output "10192484"

EAN-13

EXIT
/\$%END

Refer to 26.

Check Digit Transmission

Disable	EOA
EOA	
Enable	EOB
EOB	

Refer to 27.

Truncate Leading Zero

Disable	EPA
EPA	
Enable	EPB
EPB	

Spare Function

Disable	EOA
EOA	
Enable	EOB
EOB	

Refer to 27.

Specific Adjustments

Truncate Leading	BAS
BAS	
(Range:00 ₁₀ -15 ₁₀)	
Truncate Ending	BAT
BAT	
(Range:00 ₁₀ -15 ₁₀)	
Code ID	AAD
AAD	
(Range:00 ₁₆ -FF ₁₆ ASCII Code)	
Insertion Group	BDE
BDE	
(Range:00 ₁₀ -99 ₁₀)	



4

Code Option

PROGRAM

*** / \$ % \$ I R ***

EAN-8

Read					
<div><div>ESA</div><div>Disable</div><div>*ESA*</div></div> <div><div>ESB</div><div>Enable</div><div>*ESB*</div></div>	<div>Format</div> <table><tr><td>Data Digits (7 Digits)</td><td>Check Digit</td></tr></table>			Data Digits (7 Digits)	Check Digit
Data Digits (7 Digits)	Check Digit				
Add-on	Format				
<div><div>ETA</div><div>Disable</div><div>*ETA*</div></div> <div><div>ETB</div><div>Add-on 2 Only</div><div>*ETB*</div></div> <div><div>ETC</div><div>Add-on 5 Only</div><div>*ETC*</div></div> <div><div>ETD</div><div>Add-on 2 or 5</div><div>*ETD*</div></div>	<table><tr><td>Data Digits (7 Digits)</td><td>Check Digit</td><td>Add-on 2 or 5</td></tr></table>	Data Digits (7 Digits)	Check Digit	Add-on 2 or 5	
Data Digits (7 Digits)	Check Digit	Add-on 2 or 5			
Waiting Add-on	Refer to  26.				
<div><div>EUA</div><div>Disable</div><div>*EUA*</div></div> <div><div>EUB</div><div>Enable</div><div>*EUB*</div></div>					
Expansion	Refer to  28.				
<div><div>EVA</div><div>Disable</div><div>*EVA*</div></div> <div><div>EVB</div><div>Enable</div><div>*EVB*</div></div>					

EAN-8

EXIT
/\$%END

Refer to 26.

Check Digit Transmission

Disable EYA
EYA
Enable EYB
EYB

Refer to 27

Truncate Leading Zero

Disable EXA
EXA
Enable EXB
EXB

Spare Function

Disable EWA
EWA
Enable EWB
EWB

Refer to 27.

Specific Adjustments

Truncate Leading BAU
BAU
(Range:00₁₀-15₁₀)

Truncate Ending BAV
BAV
(Range:00₁₀-15₁₀)

Code ID1 AAE
AAE
(Range:00₁₆-FF₁₆ ASCII Code)

Code ID2 AAF
AAF
(Range:00₁₆-FF₁₆ ASCII Code)

Insertion Group BDF
BDF
(Range:00₁₀-99₁₀)

4

Code Option

PROGRAM

/\$%\$IR

CODE-39

Read

FAA

Disable

FA

FAB

Enable

FAB

Format

Start	Data Digits	Checksum	End
"*"	(Variable)	(Optional)	"*"

Format

FBA

Standard

FBA

FBB

Full ASCII

FBB

The **Full ASCII** Code-39 is an enhanced set of Code-39 that is the data with total of 128 characters to represent **Full ASCII** code. It is combined one of the digits +, %, \$ and / with one of the alpha digits (A to Z).

Code-32 Translation

FCA

Disable

FCA

FCC

Without Leading 'A'

FCC

FCD

With Leading 'A'

FCD

The Code-32 symbology (Italian Pharmaceutical) is another version of Code-39 which is a 10 digits of barcode data from digit 0 to 9. The leading A is an optional character that can be set to transmit or not.

Start/End Transmission

FFA

Disable

FFA

FFB

Enable

FFB

The Start and End characters of Code-39 are "*". You can transmit all data digits including two "*".

Append

FEA

Disable

FEA

FEB

Enable

FEB

This function which allows several symbols to be concatenated and be treated as one single data entry. The scanner will not transmit the embedded appending code (space for Code-39), If **Enable** and other symbols with the appended code were

read again, then codes will be transmitted without Code ID, Preamble and Prefix. When a symbol was decoded without the appended code, the data will be transmitted without Code ID and Prefix but the Postamble and Suffix codes are appended.

CODE-39

EXIT
/\$%END

The checksum of Code-39 is optional and made as the sum module 43 of the numerical value of the data digits.

Checksum Verification

Disable ☐ FGA

FGA

Enable ☐ FGB

FGB

By setting ☒ Enable checksum and will be transmitted.

Checksum Transmission

Disable ☐ FHA

FHA

Enable ☐ FHB

FHB

Specific Adjustments

Min. / Max. Code Length: Each symbology has own Min./Max. Code Length. They can be set to qualify data entry. If their Min./Max. Code Length is zero, the Public Min./Max. Code Length are effect. The length is defined to the actual barcode data length sent. Label with length exceeds these limits will be rejected. Make sure that the Minimum length setting is no greater than the Maximum length setting, or all the labels of the symbology will not be read. In particular, you can set the same value for both Minimum and Maximum reading length to force the fixed length barcode decoded.

Refer to 27.

Truncate Leading ☐ BAY

BAY

(Range:00₁₀-15₁₀)

Truncate Ending ☐ BAZ

BAZ

(Range:00₁₀-15₁₀)

Min. Code Length ☐ BAW

BAW

(Range:01₁₀-56₁₀)

Max. Code Length ☐ BAX

BAX

(Range:01₁₀-56₁₀)

Code ID ☐ AAG

AAG

(Range:00₁₆-FF₁₆ ASCII Code)

Code-32 ID ☐ ABH

ABH

(Range:00₁₆-FF₁₆ ASCII Code)

Insertion Group ☐ BDG

BDG

(Range:00₁₀-99₁₀)

4

Code Option

PROGRAM

/\$%\$IR

Interleaved 2 of 5

Read		Format			
<input type="checkbox"/> FKA	Disable *FKA*	<table border="1"> <tr> <td>Data Digits (Variable)</td> <td>Checksum (Optional)</td> </tr> </table>		Data Digits (Variable)	Checksum (Optional)
Data Digits (Variable)	Checksum (Optional)				
<input type="checkbox"/> FKB	Enable *FKB*				
Format		<p>Generally, the Interleaved 2 of 5 symbology is a pair of digits in each barcode. Therefore, it contains an even digits. If the symbol is present an odd number as S-code, then <u>Odd S-code</u> have to select.</p>			
<input type="checkbox"/> FLA	Standard *FLA*				
<input type="checkbox"/> FLB	Odd S-code *FLB*				
Checksum Verification		<p>The checksum is made as the sum module 10 of the numerical values of all data digits.</p>			
<input type="checkbox"/> FNA	Disable *FNA*				
<input type="checkbox"/> FNB	Enable *FNB*				
Checksum Transmission		<p>Refer to 35.</p>			
<input type="checkbox"/> FOA	Disable *FOA*				
<input type="checkbox"/> FOB	Enable *FOB*				
Spare Function					
<input type="checkbox"/> FMA	Disable *FMA*				
<input type="checkbox"/> FMB	Enable *FMB*				

Interleaved 2 of 5

Because, the start and end of interleaved 2 of 5 code is not only one pattern in symbol. In order to prevent partial reading, it is recommended to use the fixed code length for each 2 of 5 code barcode label. Setting the same **Min./Max. Code Length** it is like a length filter, and only one length is accepted.

Refer to □27, □35.

EXIT
/\$END

Specific Adjustments

Truncate Leading **BBB**

(Range:00₁₀-15₁₀)

Truncate Ending **BBD**

(Range:00₁₀-15₁₀)

Min. Code Length **BBA**

(Range:00₁₀-56₁₀)

Max. Code Length **BBB**

(Range:00₁₀-56₁₀)

Code ID **AAH**

(Range:00₁₆-FF₁₆ ASCII Code)

S-Code ID **ABI**

(Range:00₁₆-FF₁₆ ASCII Code)

Insertion Group **BDH**

(Range:00₁₀-99₁₀)

4

Code Option

PROGRAM

/\$%\$IR

Industrial 2 of 5

Read

FOA

Disable

FOA

FOB

Enable

FOB

Format

Data Digits	Checksum
(Variable)	(Optional)

Checksum Verification

FSA

Disable

FSA

FSB

Enable

FSB

The checksum is made as the sum module 10 of the numerical values of all data digits.

Checksum Transmission

FTA

Disable

FTA

FTB

Enable

FTB

Refer to □35.

Spare Function

FRA

Disable

FRA

FRB

Enable

FRB

Industrial 2 of 5

EXIT
/\$%&ND

Refer to 27, 35.

Specific Adjustments

Truncate Leading **BBG**

BBG

(Range:00₁₀-15₁₀)

Truncate Ending **BBH**

BBH

(Range:00₁₀-15₁₀)

Min. Code Length **BBE**

BBE

(Range:00₁₀-56₁₀)

Max. Code Length **BBF**

BBF

(Range:00₁₀-56₁₀)

Code ID **AAI**

AAI

(Range:00₁₆-FF₁₆ ASCII Code)

Insertion Group **BDI**

BDI

(Range:00₁₀-99₁₀)

4

Code Option

PROGRAM

/\$%\$IR

Matrix 2 of 5

Read				
<input type="checkbox"/> FVA	Disable *FVA*	Format <table border="1"> <tr> <td>Data Digits (Variable)</td> <td>Checksum (Optional)</td> </tr> </table>	Data Digits (Variable)	Checksum (Optional)
Data Digits (Variable)	Checksum (Optional)			
<input type="checkbox"/> FVB	Enable *FVB*			
Checksum Verification				
<input type="checkbox"/> FXA	Disable *FXA*	<p>The checksum is made as the sum module 10 of the numerical values of all data digits.</p>		
<input type="checkbox"/> FXB	Enable *FXB*			
Checksum Transmission				
<input type="checkbox"/> FYA	Disable *FYA*	<p>Refer to □35.</p>		
<input type="checkbox"/> FYB	Enable *FYB*			
Spare Function				
<input type="checkbox"/> FWA	Disable *FWA*			
<input type="checkbox"/> FWB	Enable *FWB*			

Matrix 2 of 5

EXIT
/\$%&ND

Refer to □27, □35.

Specific Adjustments

Truncate Leading BBK

BBK

(Range:00₁₀-15₁₀)

Truncate Ending BBL

BBL

(Range:00₁₀-15₁₀)

Min. Code Length BBJ

BBJ

(Range:00₁₀-56₁₀)

Max. Code Length BBJ

BBJ

(Range:00₁₀-56₁₀)

Code ID AAJ

AAJ

(Range:00₁₆-FF₁₆ ASCII Code)

Insertion Group BDJ

BDJ

(Range:00₁₀-99₁₀)

4

Code Option

Read

GAA

Disable

GAA

GAB

Enable

GAB

Format

Data Digits	Checksum
(Variable)	(Optional)

Checksum Verification

GCA

Disable

GCA

GCB

Enable

GCB

The checksum is made as the sum module 10 of the numerical values of all data digits.

Checksum Transmission

GDA

Disable

GDA

GDB

Enable

GDB

Refer to □35.

Spare Function

GBA

Disable

GBA

GBB

Enable

GBB

China Post 2 of 5

The code length of Post 2 of 5 is always fixed at 11. Therefore, code length of Min. and Max. is also factory default is 11.

Refer to □27, □35.

EXIT
/\$%&ND

Specific Adjustments

Truncate Leading BBO

BBO
(Range:00₁₀-15₁₀)

Truncate Ending BBP

BBP
(Range:00₁₀-15₁₀)

Min. Code Length BBM

BBM
(Range:00₁₀-56₁₀)

Max. Code Length BBN

BBN
(Range:00₁₀-56₁₀)

Code ID AAK

AAK
(Range:00₁₆-FF₁₆ ASCII Code)

Insertion Group BDK

BDK
(Range:00₁₀-99₁₀)

4

Code Option

PROGRAM

/\$%\$IR

Codabar/NW7

Read

GFA

Disable

GFA

GFB

Enable

GFB

Format

Start	Data Digits (Variable)	Cheksum (Optional)	End
-------	---------------------------	-----------------------	-----

Start/End Symbol Types

GGA

ABCD/ABCD

GGA

GGB

abcd/abcd

GGB

GGC

ABCD/TN*E

GGC

GGD

abcd/tn*e

GGD

The Codabar has four pairs of Start/End patten, you may choice one to match your application.

Same Start/End Pair

GHA

Disable

GHA

GHB

Enable

GHB

Sometime, the Codabar requires only same Start/End patten of barcode label to be decoded.

Start/End Transmission

GIA

Disable

GIA

GIB

Enable

GIB

Refer to 34.

Checksum Verification

GJA

Disable

GJA

GJB

Enable

GJB

The checksum is made as the sum module 16 of the numerical values of all data digits.

Codabar/NW7

EXIT
/\$%END

Refer to 35.

Checksum Transmission

Disable GKA
GKA

Enable GKB
GKB

Refer to 27, 35.

Specific Adjustments

Truncate Leading BBS
BBS
(Range:00₁₀-15₁₀)

Truncate Ending BBT
BBT
(Range:00₁₀-15₁₀)

Min. Code Length BBQ
BBQ
(Range:00₁₀-56₁₀)

Max. Code Length BBR
BBR
(Range:00₁₀-56₁₀)

Code ID AAL
AAL
(Range:00₁₆-FF₁₆ ASCII Code)

Insertion Group BDL
BDL
(Range:00₁₀-99₁₀)

4

Code Option

PROGRAM

/\$%\$IR

Code-128

Read		Format
<div>GMA</div> Disable <div>GMB</div> Enable	<div>GMA</div> <div>GMB</div>	
Format		<p>The Code-128 can be translated to <u>UCC/EAN-128</u> format if it starts with FNC1 character. The first FNC1 will be translated to "JC1", and next to be a concatenation code as <GS>(7F₁₆).</p> <div>JC1</div> <div>Datas</div> <GS> <div>Datas</div> <div>Checksum</div>
<div>GNA</div> Standard <div>GNB</div> UCC/EAN-128	<div>GNA</div> <div>GNB</div>	
Append		<p>This function which allows several symbols to be concatenates and be treated as one single data entry.</p>
<div>GOA</div> Disable <div>GOB</div> Enable	<div>GOA</div> <div>GOB</div>	
Checksum Verification		<p>The checksum is presented as the sum module 103 of all data digits.</p>
<div>GQA</div> Disable <div>GQB</div> Enable	<div>GQA</div> <div>GQB</div>	
Checksum Transmission		<p>Refer to 35.</p>
<div>GRA</div> Disable <div>GRB</div> Enable	<div>GRA</div> <div>GRB</div>	

Code-128

EXIT
/\$END

Spare Function	
Disable	GPA
/GPA	
Enable	GPB
/GPB	

Specific Adjustments	
Truncate Leading	BBW
/BBW	
(Range:00 ₁₀ -15 ₁₀)	
Truncate Ending	BBX
/BBX	
(Range:00 ₁₀ -15 ₁₀)	
Min. Code Length	BBU
/BBU	
(Range:00 ₁₀ -56 ₁₀)	
Max. Code Length	BBV
/BBV	
(Range:00 ₁₀ -56 ₁₀)	
Code ID	AAW
/AAW	
(Range:00 ₁₆ -FF ₁₆ ASCII Code)	
UCC/EAN-128 ID	ABJ
/ABJ	
(Range:00 ₁₆ -FF ₁₆ ASCII Code)	
Concatenation Data	ABK
/ABK	
(Range:00 ₁₆ -FF ₁₆ ASCII Code)	
Insertion Group	BDM
/BDM	
(Range:00 ₁₀ -99 ₁₀)	

Concatenation Data: This feature is only used for UCC/EAN-128 format. This Concatenation Data means you can re-assign second or after a FNC1 for your usage. The default of ASCII code is <GS>(1D₁₆).

Refer to 27, 35.

4

Code Option

PROGRAM

/\$%\$IR

Code-93

Read		Format		
<input type="checkbox"/> GTA	Disable *\$%\$IR*	Data Digits (Variable)	Checksum1 (Optional)	Checksum2 (Optional)
<input type="checkbox"/> GTB	Enable *\$%\$IR*			
Append		This function which allows several symbols to be concatenates and be treated as one single data entry.		
<input type="checkbox"/> GVA	Disable *\$%\$IR*			
<input type="checkbox"/> GVB	Enable *\$%\$IR*			
Checksum Verification		The checksum is presented as the sum module 47 of all data digits.		
<input type="checkbox"/> GWA	Disable *\$%\$IR*			
<input type="checkbox"/> GWC	One *\$%\$IR*			
<input type="checkbox"/> GWD	Two *\$%\$IR*			
Checksum Transmission		Refer to 35.		
<input type="checkbox"/> GXA	Disable *\$%\$IR*			
<input type="checkbox"/> GXB	Enable *\$%\$IR*			
Spare Function				
<input type="checkbox"/> GUA	Disable *\$%\$IR*			
<input type="checkbox"/> GUB	Enable *\$%\$IR*			

Code-93

EXIT
/\$%END

Refer to 27, 35.

Specific Adjustments

Truncate Leading **BCA**

BCA

(Range:00₁₀-15₁₀)

Truncate Ending **BCB**

BCB

(Range:00₁₀-15₁₀)

Min. Code Length **BBY**

BBY

(Range:00₁₀-56₁₀)

Max. Code Length **BBZ**

BBZ

(Range:00₁₀-56₁₀)

Code ID **AAN**

AAN

(Range:00₁₆-FF₁₆ ASCII Code)

Insertion Group **BDN**

BDN

(Range:00₁₀-99₁₀)

4

Code Option

PROGRAM

/\$%\$IR

Code-11

Read

☐GZA

Disable

GZA

☐GZB

Enable

GZB

Format

Data Digits (Variable)	Checksum1 (Optional)	Checksum2 (Optional)
---------------------------	-------------------------	-------------------------

Checksum Verification

☐HBA

Disable

HBA

☐HBC

One

HBC

☐HBD

Two

HBD

The checksum is presented as the sum module 11 of all data digits.

Checksum Transmission

☐HCA

Disable

HCA

☐HCB

Enable

HCB

By setting ☐Enable checksum1 and checksum2 will be transmitted upon your selected checksum verification method.

Spare Function

☐HAA

Disable

HAA

☐HAB

Enable

HAB

Code-11

EXIT
/\$%END

Refer to □27, □35.

Specific Adjustments

Truncate Leading BCE

BCE

(Range:00₁₀-15₁₀)

Truncate Ending BCF

BCF

(Range:00₁₀-15₁₀)

Min. Code Length BCC

BCC

(Range:00₁₀-56₁₀)

Max. Code Length BCD

BCD

(Range:00₁₀-56₁₀)

Code ID AAO

AAO

(Range:00₁₆-FF₁₆ AscII Code)

Insertion Group BDO

BDO

(Range:00₁₀-99₁₀)

4

Code Option

PROGRAM

/\$%\$IR

MSI/Plessey

Read

HEA

Disable

HEA

HEB

Enable

HEB

Format

Data Digits
(Variable)Checksum1
(Optional)Checksum2
(Optional)

Checksum Verification

HGA

Disable

HGA

HGB

Mod 10

HGB

HGC

Mod 10/10

HGC

HGD

Mod 11/10

HGD

The MSI/Plessey has one or two optional checksum digits. The checksum is presented 3 kinds of mothod Mod 10 Mod 10/10 and Mod 11/10. The checksum1 and checksum2 will be calculated as the sum module 10 or 11 of the data digits.

Checksum Transmission

HHA

Disable

HHA

HHB

Enable

HHB

Refer to 50.

Spare Function

HFA

Disable

HFA

HFB

Enable

HFB

Refer to 27, 35.

Specific Adjustments

Truncate Leading BCI

BCI

(Range:00₁₀-15₁₀)

Truncate Ending BCJ

BCJ

(Range:00₁₀-15₁₀)

Min. Code Length BCG

BCG

(Range:00₁₀-56₁₀)

Max. Code Length BCH

BCH

(Range:00₁₀-56₁₀)

Code ID AAP

AAP

(Range:00₁₆-FF₁₆ ASCII Code)

Insertion Group BDP

BDP

(Range:00₁₀-99₁₀)

4

Code Option

PROGRAM

/\$%\$IR

UK/Plessey

Read

HOA

Disable

HQA

HOB

Enable

HQB

Format

Data Digits
(Variable)Checksum1+2
(Optional)

Checksum Verification

HSA

Disable

HSA

HSB

Enable

HSB

Checksum Transmission

HTA

Disable

HTA

HTB

Enable

HTB

Refer to 35.

Spare Function

HRA

Disable

HRA

HRB

Enable

HRB

Refer to 27, 35.

Specific Adjustments	
Truncate Leading	BCQ
BCQ (Range:00 ₁₀ -15 ₁₀)	
Truncate Ending	BCR
BCR (Range:00 ₁₀ -15 ₁₀)	
Min. Code Length	BCQ
BCQ (Range:00 ₁₀ -56 ₁₀)	
Max. Code Length	BCP
BCP (Range:00 ₁₀ -56 ₁₀)	
Code ID	AAR
AAR (Range:00 ₁₆ -FF ₁₆ ASCII Code)	
Insertion Group	BDO
BDO (Range:00 ₁₀ -99 ₁₀)	

4
Code Option

PROGRAM

*** / \$ % \$ I R ***

IATA

<div>Read</div> <div> <div>HJA Disable</div> <div>* HJA *</div> <div>HJB Enable</div> <div>* HJB *</div> </div>	<div>IATA (International Air Transport Association)</div>
<div>Checksum Verification</div> <div> <div>HNA Disable</div> <div>* HNA *</div> <div>HNB Enable</div> <div>* HNB *</div> </div>	<div>The checksum is presented as sum module 7 of all data digits.</div>
<div>Checksum Transmission</div> <div> <div>HOA Disable</div> <div>* HOA *</div> <div>HOB Enable</div> <div>* HOB *</div> </div>	<div>Refer to 35.</div>
<div>Spare Function1</div> <div> <div>HKA Disable</div> <div>* HKA *</div> <div>HKB Enable</div> <div>* HKB *</div> </div>	
<div>Spare Function2</div> <div> <div>HLA Disable</div> <div>* HLA *</div> <div>HLB Enable</div> <div>* HLB *</div> </div>	

IATA

EXIT
/\$%END

Refer to 27, 35.

Specific Adjustments

Truncate Leading BCM

BCVI

(Range:00₁₀-15₁₀)

Truncate Ending BCN

BCN

(Range:00₁₀-15₁₀)

Min. Code Length BCK

BCK

(Range:00₁₀-56₁₀)

Max. Code Length BCL

BCL

(Range:00₁₀-56₁₀)

Code ID AAQ

AAQ

(Range:00₁₆-FF₁₆ ASCII Code)

Insertion Group BDR

BDR

(Range:00₁₀-99₁₀)

4

Code Option

PROGRAM

/\$%\$IR

Telepen

Read		Format		
<div>HVA</div> Disable *HMA*	<table border="1"> <tr> <td>Data Digits (Variable)</td> <td>Checksum (Optional)</td> </tr> </table>		Data Digits (Variable)	Checksum (Optional)
Data Digits (Variable)			Checksum (Optional)	
<div>HVB</div> Enable *HMB*				
Format				
<div>HWA</div> Numeric Only *HMA*	<p>A Telepen can be transmitted with Numeric and Full ASCII format. Characters can be mixed both formats inside barcode label of Telepen. By setting Auto Switching, datas can be conversed between Numeric and Full ASCII by character <DLE>(7F₁₆) automatically.</p>			
<div>HWB</div> Full ASCII Only *HMB*				
<div>HWC</div> Auto Switching *HMC*				
Checksum Verification				
<div>HYA</div> Disable *HMA*				
<div>HYB</div> Enable *HMB*				
Checksum Transmission				
<div>HZA</div> Disable *HZA*	Refer to 35.			
<div>HZB</div> Enable *HQB*				
Spare Function				
<div>HXA</div> Disable *HMA*				
<div>HXB</div> Enable *HMB*				

Telepen

EXIT
/\$%END

Refer to □27, □35.

Specific Adjustments

Truncate Leading BCU

BCU

(Range:00₁₀-15₁₀)

Truncate Ending BCV

BCV

(Range:00₁₀-15₁₀)

Min. Code Length BCS

BCS

(Range:00₁₀-56₁₀)

Max. Code Length BCT

BCT

(Range:00₁₀-56₁₀)

Code ID AAS

AAS

(Range:00₁₆-FF₁₆ ASCII Code)

Insertion Group BDS

BDS

(Range:00₁₀-99₁₀)

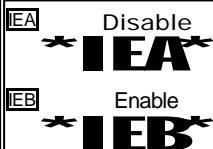
4


Code Option

*** / \$ % & ' * ***

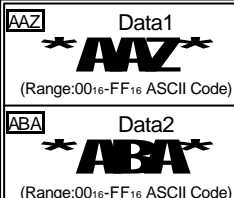
Preamble/Postamble

Preamble Transmission



By setting **Enable**, Preamble will be appended before the data transmitted. Refer to String Output Flowchart at  5.


Preamble Data



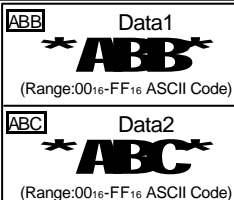
There are two control characters (**Data1** and **Data2**) can be programmed for both Preamble and Postamble datas. They are appended to the data automatically when each barcode is decoded.

Postamble Transmission



By setting **Enable**, Postamble will be appended after the data transmitted. Refer to String Output Flowchart at 5.

Postamble Data



Generally, your application need to append a carriage return character to finish data transmitted or you may set the Postamble Transmission to be **Disable** for your applicationno without any control characters appended after data transmitted. The factory default of Postamble **data1** and **data2**

is $\langle CR \rangle(0D_{16})$ and $\langle LF \rangle(0A_{16})$.

Example Append the code "@+" after each barcode transmitted.

- 1) **PROGRAM** → Entry Programming
- 2) **Enable** → Enable Postamble Transmission
- 3) **Data1** → **4** → **0** → **Data2** → **2** → **B** → **SET** → Postamble Data "@+"
 "@ " "+ "
- 4) **END** → Exit Programming

Prefix/Suffix

EXIT
/\$%END

Up to 15 characters can be programmed for Prefix data. The Prefix data of string will be placed after Preamble data and before the barcode data when it is **Enable**. Refer to String Output Flowchart at □5.

Prefix Transmission

Disable IGA

IGA

Enable IGB

IGB

Clear All IMA

IMA

Prefix Data

Data ABF

ABF

(Range:00₁₆-FF₁₆ ASCII Code)

Suffix Transmission

Disable IHA

IHA

Enable IHB

IHB

Clear All INA

INA

Up to 15 characters can be programmed for Suffix datas. The Suffix data of string will be placed after Postamble data and after the barcode data when it is **Enable**. Refer to String Output Flowchart at □5.

Suffix Data

Data ABG

ABG

(Range:00₁₆-FF₁₆ ASCII Code)

Example Append a string "ABCD" after each barcode transmitted

- 1) **PROGRAM** → Entry Programming
- 2) **Enable** → Enable Suffix Transmission
- 3) **Data** → 4 → 1 → 4 → 2 → 4 → 3 → 4 → 4 → **SET** → Suffix Data "ABCD"

"A"
"B"
"C"
"D"
- 4) **EXIT** → Exit Programming

5 String Format

PROGRAM

/\$%\$IR

Character Insertion

Add-on Insertion

IA	Disable
* IIA *	
IB	Enable
* IIB *	

The scanner offers 2 characters of insertion between WPC and add-on code.

Format

WPC	Add-on Insertion	Add-on
-----	------------------	--------

Add-on Insertion Data

ABD	Data1
* ABD *	
(Range:00 ₁₆ -FF ₁₆ ASCII Code)	
ABE	Data2
* ABE *	
(Range:00 ₁₆ -FF ₁₆ ASCII Code)	

Insertion1 Data

BCW	Position1
* BCW *	
(Range:01 ₁₀ -48 ₁₀)	
ABL	Data1
* ABL *	
(Range:00 ₁₆ -FF ₁₆ ASCII Code)	
ABM	Data2
* ABM *	
(Range:00 ₁₆ -FF ₁₆ ASCII Code)	

The scanner offers 4 positions and 8 characters to insert among the symbol. The position default value is "00" to indicate no character insertion. Besides, make sure insertion positions are not greater than the symbols, otherwise the insertion data has no effect.

Insertion2 Data

BCX	Position2
* BCX *	
(Range:01 ₁₀ -48 ₁₀)	
ABN	Data1
* ABN *	
(Range:00 ₁₆ -FF ₁₆ ASCII Code)	
ABO	Data2
* ABO *	
(Range:00 ₁₆ -FF ₁₆ ASCII Code)	

Character Insertion

EXIT
/\$END

Insertion3 Data

Position3	BCY
BCY	
(Range:00 ₁₀ -15 ₁₀)	
Data1	ABP
ABP	
(Range:00 ₁₆ -FF ₁₆ ASCII Code)	
Data2	ABQ
ABQ	
(Range:00 ₁₆ -FF ₁₆ ASCII Code)	

Example Barcode "1234567"

	Position	Data1	Data2
Insertion1	2	A	B
Insertion2	5	C	D

- 1) **PROGRAM** → Entry programming
- 2) **Position1** → 0 → 2 → **SET** Position1 "2"
- 2) **Data1** → 4 → 1 → **SET** → Insertion1
Data2 → 4 → 2 → **SET** → Data "AB"
- 4) **Position2** → 0 → 2 → **SET** Position2 "5"
- 5) **Data1** → 4 → 3 → **SET** **Data2** → 4 → 4 → **SET** → Insertion2 Data "CD"
- 6) **Insert Group** → 1 → 2 → **SET** Insertion1 and Insertion2
or **Insert Group** → 2 → 1 → **SET**

Output

12	AB	345	CD	67
----	----	-----	----	----

- 6) **Insert Group** → 0 → 1 → **SET** Insertion1 only
or **Insert Group** → 1 → 0 → **SET**

Output

12	AB	34567
----	----	-------

- 6) **Insert Group** → 1 → 1 → **SET** Insertion1 outopt twice

Output

12	AB	AB	34567
----	----	----	-------

- 6) **Insert Group** → 0 → 0 → **SET** insertion off

Output

1234567

- 7) **EXIT** Exit Programming

Insertion4 Data

Position4	BCZ
BCZ	
(Range:00 ₁₀ -15 ₁₀)	
Data1	ABR
ABR	
(Range:00 ₁₆ -FF ₁₆ ASCII Code)	
Data2	ABS
ABS	
(Range:00 ₁₆ -FF ₁₆ ASCII Code)	

5

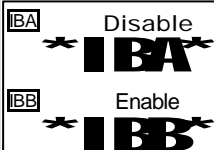
String Format

PROGRAM

/\$%\$IR

Other Control

Code ID Translation



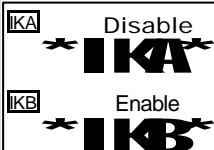
If your application want to transmit Code ID, you must set this Enable

Code ID Position



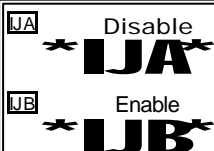
Upon your usage, the transmitting position of Code ID can be selected to place Before or After Code Data when it transmitted.

Length Transmission



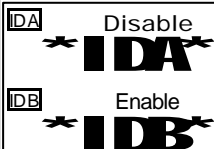
A number of data digits can be transmitted before the code data when Enable is selected. The total length is a number of barcode datas except Truncate Leading/Ending Digits. And the length has two digits.

Code Name Transmission



This function is useful to show unknown barcode symbologies which include all readable symbologies of the scanner. When Enable is selected, Code Name will be transmitted before code data, then you will know what kind of barcode symbology is.

Spare Function



Other Control

EXIT
/\$%END

If scanner is operated in inverse barcode reading, use inverse **PROGRAM** to entry scanner programming.

Inverse PROGRAM

PROGRAM

/\$%STR

Generally, the scanner can only read positive barcode signals which are printed black on white (call normal barcode). By setting **Inverse Barcode**, the scanner will read negative barcode which bars are printed with light color and spaces with dark color (call inverse barcode). This function is optional for some special models.

Normal/Inverse Barcode

Normal Barcode ☐ IPA

/IPA

Inverse Barcode ☐ IPB

/IPB

Normal & Inverse ☐ IPC

/IPC

Last barcode data can re-send with trigger. It's only for Timeout Off, Timeout Flash and Continue scanning mode during the light source is on. In other way, if light is off, last barcode data will be clear and re-send invalid.

Re-send with Trigger

Disable ☐ IOA

/IOA

Enable ☐ IOB

/IOB

Ratio Adjustment

1:2.5 ☐ IOA

/IOA

1:1.35 ☐ IOB

/IOB

1:1.5 ☐ IOC

/IOC

5

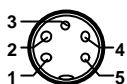
String Format

Cable Type

IBM PC, XT, AT & PS/2				
Function	5p Din(M)	5p Din(F)	6p Mini Din(M)	6p Mini Din(F)
Clock (Host)	1	---	5	---
Data (Host)	3	---	1	---
Clock (KBD.)	---	1	---	5
Data (KBD.)	---	3	---	1
Ground	2	2	3	3
GND Shield	2	2	3	3
VCC (+5V)	4	4	4	4



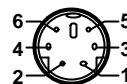
5p Din(M)



5p Din(F)



5p Mini Din(M)

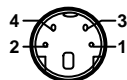


6p Mini Din(F)

Macintosh		
Function	4p Mini Din(M)	4p Mini Din(F)
RST (Host)	2	2
Data (Host)	1	1
Ground	4	4
GND Shield	4	4
VCC (+5V)	3	3



4p Mini Din(M)



4p Mini Din(F)

NEC 9801		
Function	8p Mini Din(M)	8p Mini Din(F)
Ready (Host)	4	---
Data (Host)	3	---
Reset (Host)	1	1
Retry (Host)	5	5
Ready (KBD.)	---	4
Data (KBD.)	---	3
Ground	2	2
GND Shield	2	2
VCC (+5V)	8	8



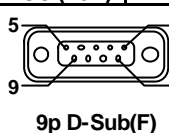
8p Mini Din(M)



8p Mini Din(F)

Cable Type

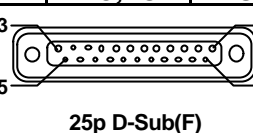
RS-232C				
Function	9p D-Sub(F)	25p D-Sub(F)	8p Din(M)	DC Jack(M)
TxD	2	3	1	---
RxD	3	2	2	---
RTS	8	5	3	---
CTS	7	4	4	---
Shorted	4,6	6,20	---	---
Ground	5	7	7	2
GND Shield	5	7	7	2
VCC (+5V)	9	16,25	8	1



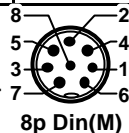
9p D-Sub(F)



DC Jack(M)

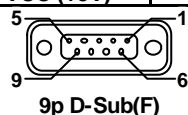


25p D-Sub(F)



8p Din(M)

Wand Emulation			
Function	9p D-Sub(F)	5p Din(M)	6p Din(M)
Data	2	2	2
Ground	7	3	3
GND Shield	8	3	3
VCC (+5V)	9	1	1



9p D-Sub(F)



5p Din(M)



6p Din(M)

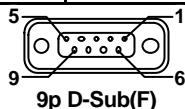
TTL (CMOS)			
Function	5p Din(M)	6p Din(M)	9p D-Sub(F)
Start Of Scan	---	6	1
Data	2	2	2
Indicator	---	---	3
Trigger	5	5	5
Enable	4	4	6
Ground	3	3	7
GND Shield	3	3	8
VCC (+5V)	1	1	9



5p Din(M)



6p Din(M)



9p D-Sub(F)

Test Chart

UPC-A



EAN-13 (ISBN) with Add-on 5



Code-39 (Full ASCII Code)



Interleaved 2 of 5



Code-93



Code-128 (C Type)



Test Chart

Codabar/NW7



C98765D



D43210A

MSI/Plessey



1 0 5 5 8 3 0 2 5

CODE-11



8 8 6 2 6 4 7 7 7 9 7 3 3

UK/Plessey



1 6 5 2 0 0 0 3 5 4 6 1

Telepen



TELEPEN Test ±
(Numeric: 57424942534251055774888916)

IATA



0 0 1 0 2 0 0 0 0 1 0 9 1 9 6

7

Test Chart

ASCII Code Table

L\H	0	1	0	1
0	Null		NUL	DLE
1	Up	F1	SOH	DC1
2	Down	F2	STX	DC2
3	Left	F3	ETX	DC3
4	Right	F4	EOT	DC4
5	PgUp	F5	ENQ	NAK
6	PgDn	F6	ACK	SYN
7		F7	BEL	ETB
8	Bs	F8	BS	CAN
9	Tab	F9	HT	EM
A		F10	LF	SUM
B	Home	Esc	VT	ESC
C	End	F11	FF	FS
D	Enter	F12	CR	GS
E	Insert	Ctrl+	SO	RS
F	Delete	Alt+	SI	US

For keyboard wedge only.

L\H	2	3	4	5	6	7
0	SP	0	@	P	`	p
1	!	1	A	Q	a	q
2	“	2	B	R	b	r
3	#	3	C	S	c	s
4	\$	4	D	T	d	t
5	%	5	E	U	e	u
6	&	6	F	V	f	v
7	‘	7	G	W	g	w
8	(	8	H	X	h	x
9	)	9	I	Y	i	y
A	*	:	J	Z	j	z
B	+	;	K	[	k	{
C	,	<	L	\	l	|
D	-	=	M	]	m	}
E	.	>	N	^	n	~
F	/	?	O	_	o	DEL

0	**%00*	%00
1	**%01*	%01
2	**%02*	%02
3	**%03*	%03
4	**%04*	%04
5	**%05*	%05
6	**%06*	%06
7	**%07*	%07
8	**%08*	%08
9	**%09*	%09
A	**%0A*	%0A
B	**%0B*	%0B
C	**%0C*	%0C
D	**%0D*	%0D
E	**%0E*	%0E
F	**%0F*	%0F
SET	**%0K*	%0K